Page 1 of 10



OIPE

ENTERED

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/892,635A

TTME.

DATE: 06/16/2003 P.6

TIME: 15:27:32

```
4 <110> APPLICANT: May, Gregory D.
         Clendennen, Stephanie K.
         Mason, Hugh S.
         Lim, Miguel A. Gomez
 7
         Arntzen, Charles J.
10 <120> TITLE OF INVENTION: DNA Regulatory Elements Associated with Fruit Development
12 <130> FILE REFERENCE: 031998-007
14 <140> CURRENT APPLICATION NUMBER: US 09/892,635A
15 <141> CURRENT FILING DATE: 2001-06-28
17 <150> PRIOR APPLICATION NUMBER: US 09/160,351
18 <151> PRIOR FILING DATE: 1998-09-25
20 <150> PRIOR APPLICATION NUMBER: US 60/060,062
21 <151> PRIOR FILING DATE: 1997-09-25
23 <160> NUMBER OF SEQ ID NOS: 45
25 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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30 <213> ORGANISM: Musa acuminata
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                                                                Met
38
41 gcg atc cga tcg cca gct tcg ctg ctg tta ttt gcg ttc ctg atg ctt
                                                                      105
42 Ala Ile Arg Ser Pro Ala Ser Leu Leu Phe Ala Phe Leu Met Leu
                5
45 gcg ctc acg gga aga ctg cag gcc cgg cgc agc tca tgc att ggc gtc
                                                                      153
46 Ala Leu Thr Gly Arg Leu Gln Ala Arg Arg Ser Ser Cys Ile Gly Val
            20
                                                                      201
49 tac tgg gga caa aac acc gac gag gga agc tta gca gat gct tgt gcc
50 Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp Ala Cys Ala
                                                 45
                             40
                                                                       249
53 aca ggc aac tac gaa tac gtg aac atc gcc acc ctt ttc aag ttt ggc
54 Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe Lys Phe Gly
                         55
55 50
57 atg ggc caa act cca gag atc aac ctc gcc ggc cac tgt gac cct cgg
                                                                       297
58 Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys Asp Pro Arg
                     70
61 aac aac ggc tgc gcg cgc ttg agc agc gaa atc cag tcc tgc cag gag
                                                                       345
62 Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser Cys Gln Glu
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RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/892,635A

DATE: 06/16/2003
TIME: 15:27:32

| <i>(</i> 2 | | | | 85 | | | | | 90 | | | | | 95 | | | |
|------------|--------------|------------|-------|-------|-------|------------------|-------|------------|-------------|------------|-------|---------|------------|------------|------|----------------|---------|
| 63 65 | cat | aac | atc | | ata | atα | ctc | tcc | | qqa | ggt | qqc | ggg | | tat | ggc | 393 |
| 66 | Ara | Glv | Val | Lvs | Val | Met | Leu | Ser | Ile | Gly | бĺу | Ğly | Gly | Ser | Tyr | Gly | |
| 67 | 1119 | 011 | 100 | 210 | | | | 105 | | - | - | - | 110 | | | | |
| 69 | cta | agt | t.cc | acc | gaa | qac | qcc | aaq | gac | gta | gcg | tca | tac | ctc | tgg | cac | 441 |
| 70 | Leu | Ser | Ser | Thr | Ğlu | Asp | Ála | Lys | Asp | Val | Ala | Ser | Tyr | Leu | Trp | His | |
| 71 | | 115 | | | | | 120 | | | | | 125 | | | | | |
| 73 | agt | ttc | ttg | ggt | ggt | tct | gct | gct | cgc | tac | tcg | aga | ccc | ctc | ggg | gat | 489 |
| 74 | Ser | Phe | Leu | Gly | Gly | Ser | Ala | Ala | Arg | Tyr | Ser | Arg | Pro | Leu | Gly | Asp | |
| 75 | 130 | | | | | 135 | | | | | 140 | | | | | 145 | 507 |
| 77 | gcg | gtt | ctg | gat | ggc | ata | gac | ttc | aac | atc | gcc | gga | ggg | agc | aca | gaa | 537 |
| 78 | Ala | Val | Leu | Asp | | Ile | Asp | Phe | Asn | | Ala | GLY | Gly | Ser | Thr | GIU | |
| 79 | | | | | 150 | | | | | 155 | | | | ~~~ | 160 | ~~~ | 585 |
| 81 | cac | tat | gat | gaa | ctt | gcc | gct | ttc | ctc | aag | gcc | tac | aac | gag | Cln | Glu | 202 |
| | His | Tyr | Asp | | Leu | Ala | Ala | Pne | | ьys | Ата | ıyı | Asn | 175 | GIII | Giu | |
| 83 | | | | 165 | | | | ++~ | 170 | a a t | cat | cca | cad | _ | cct | ttc | 633 |
| 85 | gcc | gga | acg | aag | aaa | gtt | uic | Tou | Sor | ycc Δ1= | Ara | Pro | cag Gln | Cvs | Pro | Phe | |
| | Ата | стА | 180 | ьуѕ | ьуѕ | Val | птэ | 185 | Ser | АΙα | my | 110 | 190 | 0,0 | | | |
| 87 | ~~~ | ~a+ | | taa | ctt | aac | aac | | ctc | aga | aca | gat | ctc | ttc | gac | ttc | 681 |
| 90 | Pro | yat Aen | Tur | Trn | Len | Glv | Asn | Ala | Leu | Ara | Thr | Asp | Leu | Phe | Āsp | Phe | |
| 91 | FIO | 195 | тут | ııp | пса | O _T y | 200 | | | 9 | | 205 | | | - | | |
| 93 | ata | taa | at.a | cad | ttc | ttc | | | cct | tcg | tgc | cat | ttc | tcc | cag | aac | 729 |
| 94 | Val | Trp | Val | Gln | Phe | Phe | Asn | Asn | Pro | Ser | Cys | His | Phe | Ser | Gln | Asn | |
| 95 | 210 | | | | | 215 | | | | | 220 | ŀ | | | | 225 | |
| 97 | gct | atc | aat | ctt | gca | aat | gcg | ttc | aac | aat | tgg | gto | atg | tcc | atc | cct | 777 |
| 98 | Āla | Ile | Asn | Leu | Ala | Asn | Ala | Phe | Asn | Asn | Trp | Val | Met | Ser | Ile | Pro | |
| 99 | | | | | 230 | | | | | 235 | | | | | 240 | | 0.25 |
| 10 | 1 gc | g ca | a aa | g ct | g tt | .c ct | t gg | g ct | t cc | t go | t go | t co | t ga | g gc | t gc | t cca | 825 |
| | | a Gl | n Ly | | | ie Le | u Gl | у Le | | | a Al | a Pr | .O GT | u AI 25 | а Ат | a Pro | |
| 10 | 3 | | | 24 | | | | | 25 | | a at | · a + c | ,+ aa | | | t cca | 873 |
| 10 | 5 ac | t gg | t gg | c ta | c at | T CC | a cc | C Ca | . L ya | n Te | .C at | ع د د | r I.v | ayı | l Le | t ccg u Pro | 0.0 |
| | | r Gl | y G1 | | L TI | e PI | OFI | 26 | .s As :5 | Ъпе | .u 11 | | 27 | 0 | | ~ | |
| 10 | / 0. a+ | a a+ | | | + + | ac de | c 22 | | | a aa | a at | c at | | | σac | t aga | 921 |
| 11 | Э ас Л ті | о Т.е | .a aa | ig go | n Se | er As | n Tiv | s Tv | r Al | a Gl | v Il | e Me | et Le | u Tr | p Th | r Arg | |
| 11 | | 27 | | 5 710 | ъ О | | 28 | | | | - | 28 | 35 | | - | _ | |
| 11 | i 3 ta | c ca | с аа | ic ac | ra aa | ac to | c qo | c ta | c aq | rt to | et ca | aa gt | c aa | g tc | с са | c gtg | 969 |
| 11 | 4 Tv | r Hi | s As | n Ar | a As | n Se | er ĞÎ | , .у Ту | r Se | r Se | er Gl | ln Va | al Ly | s Se | r Hi | s Val | |
| 11 | 5 29 | 0 | | | | 29 | 95 | | | | 30 | 00 | | | | 305 | |
| 11 | 7 to | rt co | a go | g co | gt co | gg tt | c to | c aa | ac at | c tt | a to | ct at | g cc | g gt: | g aa | g tct | 1017 |
| 11 | 8 Cy | s Pr | o Āl | a Ai | g A | g Pl | ie Se | er As | sn Il | e Le | eu Se | er Me | et Pr | o Va | т г | s Ser | |
| 11 | 9 | | | | 3: | LO | | | | 31 | 15 | | | | 32 | . 0 | 1066 |
| 12 | 1 to | c aa | ig ta | aa ac | cctga | acgg | , cgt | agat | gat | cggt | ggto | cga a | aaact | ccga | .t | | 1066 |
| 12 | 2 Se | r Ly | s ' | ŕ | | | | | | | | | | | | | L 1106 |
| 12 | 5 ca | tcat | gggt | ccc | cat | ccgt | atco | gtg | cgt t | gcta | cgt | ta to | ggtgt | ttcc | ctt | gtatgi | tt 1126 |
| 12 | 6 gg | tctt | ttca | ata | aata | taat | aagg | gggtt | ag t | ttta | acgti | tt Co | caaaa | iadaa | dda | idaddd | aa 1186 |
| | | | | ID 1 | | 2 | | | | | | | | | | | |
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RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/892,635A TIME: 15:27:32

DATE: 06/16/2003

Input Set : A:\031998-007.ST25.txt

Output Set: N:\CRF4\06162003\1892635A.raw

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139 Val Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp Ala Cys
                              40
141 Ala Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe Lys Phe
                           55
143 Gly Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys Asp Pro
                       70
                                          75
145 Arg Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser Cys Gln
                                      90
                  85
147 Glu Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Ser Tyr
                                  105
148 100
149 Gly Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr Leu Trp
                               120
150 115
151 His Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro Leu Gly
                           135
153 Asp Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly Ser Thr
                      150
155 Glu His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn Glu Gln
                                      170
                   165
157 Glu Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln Cys Pro
                                  185
              180
159 Phe Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu Phe Asp
    195
                              200
161 Phe Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe Ser Gln
                          215
       210
163 Asn Ala Ile Asn Leu Ala Asn Ala Phe Asn Asn Trp Val Met Ser Ile
                                          235
                      230
165 Pro Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu Ala Ala
                   245
                                       250
167 Pro Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys Val Leu
               260
                                   265
169 Pro Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu Trp Thr
170 275
                               280
171 Arg Tyr His Asp Arg Asn Ser Gly Tyr Ser Ser Gln Val Lys Ser His
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173 Val Cys Pro Ala Arg Arg Phe Ser Asn Ile Leu Ser Met Pro Val Lys
174 305
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175 Ser Ser Lys
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180 <211> LENGTH: 90
181 <212> TYPE: PRT
182 <213> ORGANISM: Musa acuminata
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184 <400> SEQUENCE: 3

RAW SEQUENCE LISTING PATENT APPLICATION: US/09/892,635A DATE: 06/16/2003 TIME: 15:27:32

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186 1
187 Leu Ala Leu Thr Gly Arg Leu Gln Ala Arg Arg Ser Ser Cys Ile Gly
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189 Val Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ser Asp Lys Tyr
191 Ala Gly Ile Met Leu Trp Thr Arg Tyr His Asp Arg Asn Ser Gly Tyr
193 Ser Ser Gln Val Lys Ser His Val Cys Pro Ala Arg Arg Phe Ser Asn
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195 Ile Leu Ser Met Pro Val Lys Ser Ser Lys
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199 <210> SEQ ID NO: 4
200 <211> LENGTH: 67
201 <212> TYPE: PRT
202 <213> ORGANISM: Musa acuminata
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206 1
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207 Leu Ile Lys Ser Ser Asn Ala Ala Gly Ile Ala Val Tyr Trp Gly Gln
                                    25
              20
209 Asn Gly Asn Glu Gly Ser Leu Ser Pro Lys Tyr Gly Gly Val Met Ile
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211 Trp Asp Arg Phe Asn Asp Ala Gln Ser Gly Tyr Ser Asn Ala Ile Lys
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212 50
213 Gly Ser Val
214 65
217 <210> SEQ ID NO: 5
218 <211> LENGTH: 69
219 <212> TYPE: PRT
220 <213> ORGANISM: Musa acuminata
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225 Leu Ala Leu Ile Lys Thr Ser Tyr Ala Gly Gly Ile Ala Ile Tyr Trp
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227 Gly Gln Asn Gly Asn Glu Gly Thr Leu Ser Pro Lys Tyr Gly Gly Val
228 35
229 Met Ile Trp Ser Lys Phe Tyr Asp Asp Gln Ser Gly Tyr Ser Asn Ser
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       50
231 Ile Lys Gly Ser Val
232 65
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237 <212> TYPE: PRT
238 <213> ORGANISM: Musa acuminata
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RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/892,635A

DATE: 06/16/2003 TIME: 15:27:32

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   245 Ala Ile Tyr Trp Gly Gln Asn Gly Asn Glu Gly Asn Leu Ser Arg Lys
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   247 Tyr Gly Gly Val Met Ile Trp Ser Lys Phe Trp Asp Asp Lys Asn Gly
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    249 Tyr Ser Asn Ser Ile Leu Ala Ser Val
    250 65
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    255 <212> TYPE: PRT
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                         5
    260 1
    261 Ala Leu Lys Leu Glu Ala Gly Asp Ile Val Ile Tyr Trp Gly Gln Asn
                    20
    263 Gly Asn Glu Gly Asn Leu Ser Pro Lys Tyr Gly Gly Val Met Ile Trp
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            50
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    270 <211> LENGTH: 67
    271 <212> TYPE: PRT
    272 <213> ORGANISM: Musa acuminata
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                                             10
                          5
    276 1
    277 Phe Ala Ser Phe Glu Ser Ser His Gly Gly Gln Ile Val Ile Tyr Trp
                                         25
                     20
    279 Gly Gln Asn Gly Asn Glu Gly Asn Leu Ser Ala Lys Tyr Gly Gly Val
                                     40
    281 Met Ile Trp Ser Lys Ala Tyr Asp Asn Gly Tyr Ser Asn Ala Ile Leu
                                 55
             50
    282
    283 Ala Ser Val
    284 65
    287 <210> SEQ ID NO: 9
     288 <211> LENGTH: 496
     289 <212> TYPE: DNA
     290 <213> ORGANISM: Musa acuminata
     292 <220> FEATURE:
     293 <221> NAME/KEY: misc_feature
     294 <222> LOCATION: 163, 387, 471
     295 <223> OTHER INFORMATION: n = A, T, C or G
     297 <400> SEQUENCE: 9
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     299 tcgacctgcg gcaactgcga ctgcgttgac aagagccagt gcgtgaagaa gggaaacagc 120
W--> 300 tacggtatcg atattgttga gaccgagaag agctacgtcg acnaggtgat cgttgccgca 180
     301 gaagetgeeg ageatgaegg caagtgeaag tgeggegeeg cetgegeetg caeegaetge 240
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 06/16/2003 PATENT APPLICATION: US/09/892,635A TIME: 15:27:33

Input Set : A:\031998-007.ST25.txt
Output Set: N:\CRF4\06162003\I892635A.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

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Seq#:22; N Pos. 1093,1515,2166,2216,2265,2345,2533,2870,2917,3077,3337,3356
Seq#:22; N Pos. 3618,3627,3754,3810,3819,3884,3893,4494,4503,4524,4533,4568
Seq#:22; N Pos. 4574,4597,4654,4724,4741,4759,4852,5027,5253,5546,5565,5567
Seq#:22; N Pos. 5575,5578,5618,5619,5650,5669,5672,5677,5683,5694,5704,5708
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Seq#:22; N Pos. 6612,6712,6748,6753,6756,6762,6830,6844,6847,6863,6910,6965
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Seq#:23; N Pos. 6968,7070,7116,7179,7291,7322,7325,7345,7351,7359,7387,7395
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 Seq#:26; Xaa Pos. 23,196,205,209,214,226,254,260,264,267,284,285,287,289
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RAW SEQUENCE LISTING ERROR SUMMARY PATENT APPLICATION: US/09/892,635A DATE: 06/16/2003 TIME: 15:27:33

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Output Set: N:\CRF4\06162003\1892635A.raw

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DATE: 06/16/2003

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/892,635A TIME: 15:27:33

Input Set : A:\031998-007.ST25.txt
Output Set: N:\CRF4\06162003\I892635A.raw

L:300 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:9 after pos.:120 M:341 Repeated in SeqNo=9 L:1050 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:22 L:1057 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:22 L:1062 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:22 L:1064 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:60 M:341 Repeated in SeqNo=22 L:1210 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:23 L:1217 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:23 L:1222 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:23 L:1224 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23 after pos.:60 M:341 Repeated in SeqNo=23 L:1370 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:24 L:1377 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:24 L:1380 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:24 after pos.:16 M:341 Repeated in SeqNo=24 L:1692 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:25 L:1698 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:25 L:1701 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25 after pos.:16 M:341 Repeated in SeqNo=25 L:2005 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:26 L:2012 M:258 W: Mandatory Feature missing, <220> Tag not found for SEQ ID#:26 L:2015 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26 after pos.:16 M:341 Repeated in SeqNo=26 L:2336 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27 after pos.:840 M:341 Repeated in SeqNo=27 L:2431 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28 after pos.:840 M:341 Repeated in SeqNo=28 L:2658 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29 after pos.:1168 M:341 Repeated in SeqNo=29 L:2739 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30 after pos.:144 M:341 Repeated in SeqNo=30 L:2952 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31 after pos.:160 M:341 Repeated in SeqNo=31 L:3169 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32 after pos.:1680 L:3221 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33 after pos.:1680 L:3313 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34 after pos.:544 L:3420 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:528 L:3531 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:544 L:3600 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 after pos.:1680 M:341 Repeated in SeqNo=37 L:3644 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38 after pos.:1680 M:341 Repeated in SeqNo=38 L:3728 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:39 after pos.:544 M:341 Repeated in SeqNo=39 L:3815 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40 after pos.:528 M:341 Repeated in SeqNo=40 L:3936 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44 after pos.:840

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/892,635A

DATE: 06/16/2003

TIME: 15:27:33

Input Set : A:\031998-007.ST25.txt

Output Set: N:\CRF4\06162003\1892635A.raw

L:3984 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45 after pos.:840